New Pumps Levers & Nozzles

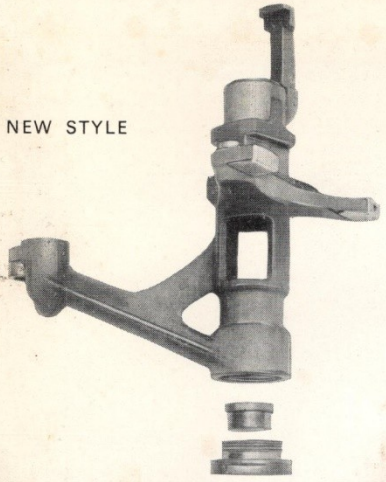
Monotype Company of Canada Limited brings you a new-style pump and nozzle, and an improved set of levers, to increase the efficiency of your 'Monotype' composition caster.

How is this new equipment going to affect the machine Operator? With regular maintenance, it will be easier to handle and will last longer than existing components. Furthermore, production will be increased, replacement costs will be reduced and the quality of the type will be considerably improved.

So that you may understand these new pumps, levers and nozzles, let us first see how they differ from your old equipment.

Monotype Company of Canada Limited

NEW STYLE

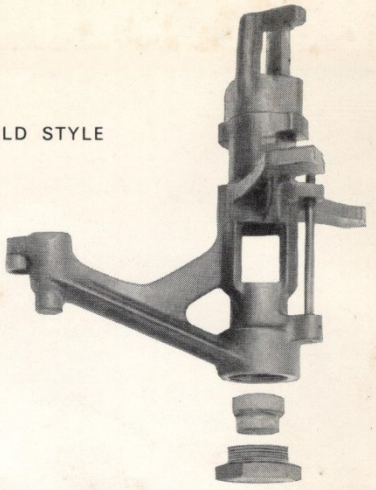


Pump Body

You will notice that the new pump body does not incorporate a metal-flow regulation screw – this adjustment is cared for, automatically, by the new-style piston assembly.

The new pump well is built to last longer, having ALLOY-IRON BUSHINGS and REPLACEABLE LINERS at all the wearing points, and a stainless-steel bottom plug and pump body bearing.

OLD STYLE

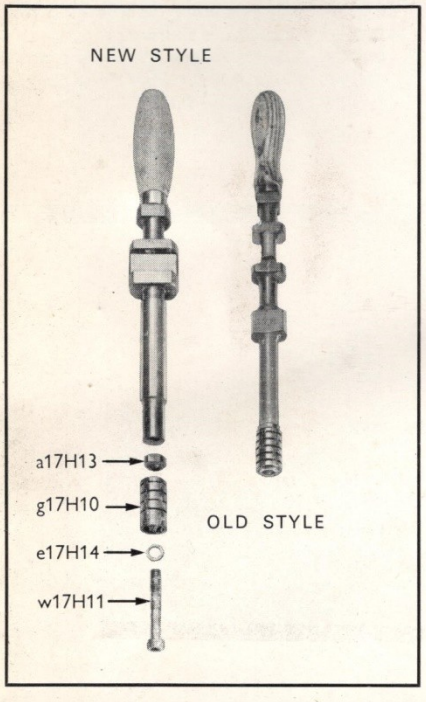


Piston

The new piston assembly has a replaceable hardened and tempered ALLOY-IRON END and built-in valve which needs no adjustment for different type sizes.

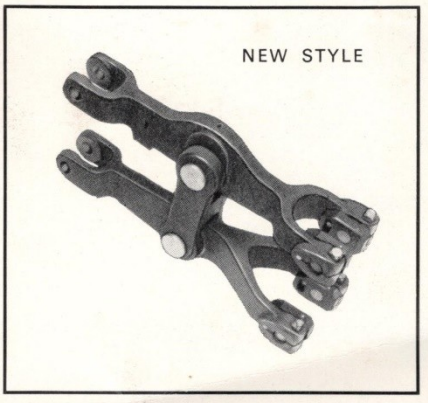
The length of the piston stem end g17H10 permits the entire length of the pump body bushing to be swept during operation. This prevents build up of dross in the lower bushing, and subsequent sticking of the piston.

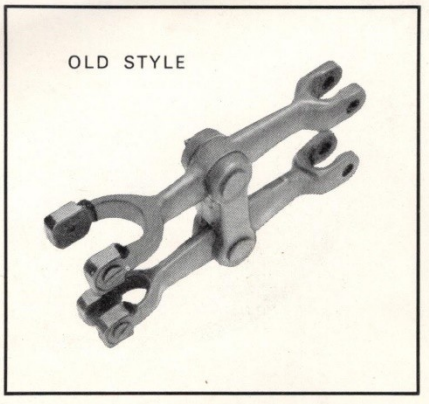
Both the stem end screw w17H11 and valve washer e17H14 are made of stainless steel for long life.



Levers

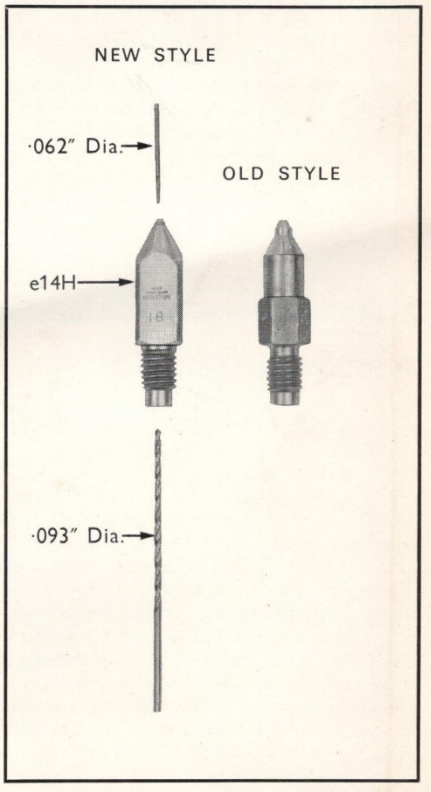
The new levers are fitted with END BEARING BLOCKS and PINS which can be easily renewed any number of times by you in your own plant. Thus, it will no longer be necessary for you to replace the complete lever. If the levers are dismantled at any time, the illustration below should be used as a guide to their reassembly.





Nozzle

The new nozzle is designed to insure that the tip will fully enter into the mold cone hole, thus producing a metal-tight fit and enabling casting to take place between the range of around 650°F for 12 pt. to approximately 700°F for 6 pt. To cast at these temperatures, it is advisable to have a reliable thermometer available so that the heater control can be checked from time to time.



MAINTENANCE AND ADJUSTMENTS

The operating technique is very similar for both old and new equipment, but slightly different adjustments and maintenance are necessary. Eight special tools *(Fig. 1)* are available for this purpose and we suggest that you have at least one set of them in your plant.

If the piston stem end is cleaned daily, using the brass wire brush with a small quantity of piston paste for polishing, it will give excellent results.

In addition to the regular maintenance you normally give the pump well and piston, the following routine must be applied to all new-style pistons:

Every week, while the metal in the pot is still molten, withdraw the piston (using the extractor tool X31CT or a convenient lever, if necessary, to free this component. Never tap the piston shoulder). Before it has time to cool, slacken the lock nut a17H13 and, using the wrench Xa29CT, remove the screw w17H11. With a brass wire brush – never a file or emery cloth – remove the dross from all parts, including the stem end and the washer e17H14. When the various parts of the piston assembly are thoroughly clean, re-assemble them, making certain that the washer is replaced with the slots facing the stem end and not the head of the screw.

The new piston is designed to cast type from $4\frac{1}{4}$ pt. to 14 pt. without any adjustments, but it is important to remember that the stem end screw must be adjusted to allow the stem end approximately $\frac{1}{32}''$ of movement. This is effected by turning the screw into the stem until all movement is eliminated and then unscrewing one half turn. Remember to re-heat the piston in molten metal before finally tightening the lock nut a17H13.

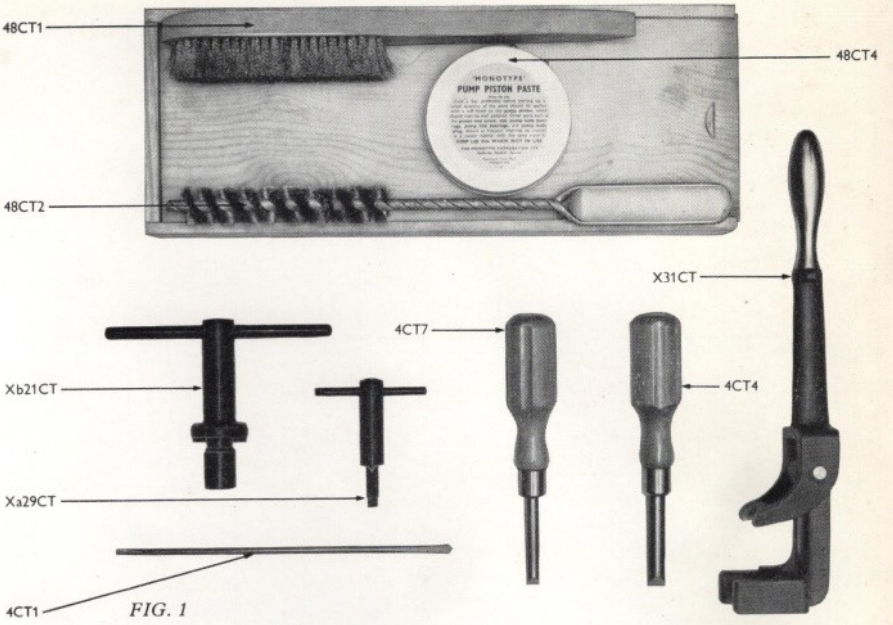


FIG. 1

Part No.	Name
4CT1	*Well Arm Drill*
4CT4	*Cleaning Tool for Pump Body Bearing (Nozzle End)*
4CT7	*Cleaning Tool for Nozzle End of Pump Body*
Xb21CT	*Cleaning Tool for Pump Body Bushing, Lower*
Xa29CT	*Cleaning Tool for Pump Piston Washer Seating (this tool is also used as a wrench for the stem end screw)*
X31CT	*Pump Piston Extractor*
48CT1	*Brass Wire Brush for Pump Piston*
48CT2	*Brass Wire Brush for Pump Body*
48CT4	*Pump Piston Paste*

Nozzle Drilling

One of your regular daily duties is to drill the nozzle, from both ends, whether or not it appears to need it.

Two drills are used: $\frac{1}{16}''$ (·062″) diameter for the top hole, and $\frac{3}{32}''$ (·093″) diameter for the lower hole. Preparation of your drilling equipment is most important for the lower hole because, if the drill is allowed to penetrate too far, it will break through the tip of the nozzle. You can see, in figure 2, that the amount by which the drill protrudes from the hand-drill is measured from the tip of the drill to the chuck. This measurement must never exceed $2\frac{3}{64}''$ for an e14H nozzle.

Depth of drilling for the top hole is not so critical, but be certain that the chuck of the hand-drill does not touch the tip of the nozzle.

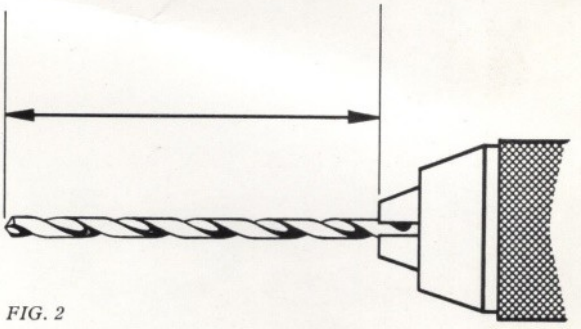
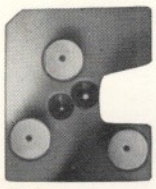


FIG. 2

Squaring Nozzle to Machine Base

The nozzle must rise vertically and be square with the mold to insure a metal-tight fit in its conical seating. If the nozzle does not rise vertically, it will quickly become worn at its point and the quality of the product will suffer.

Before attempting to carry out the following adjustments, remove all traces of dross from the pump body lifting lever pin a26H3 and the pump body bearing 23H1 (use tool 4CT4 for this purpose). Note that the pin a26H3 must have a domed end to insure correct operation of the lifting lever. If the contours of the pin have been destroyed, it should be replaced. Check that the pump body lifting lever d25H is free in operation. If the lifting lever b26H fails to move freely, tap out the stud a26H1, on which it pivots, after unscrewing the stud retaining nut; this is carried out more easily when the type metal is solid, providing a rigid support for the lever. Clean the stud and smear it with piston paste before replacing.



8CT3
Nozzle Gauge

8CT6
Nozzle Squaring Post

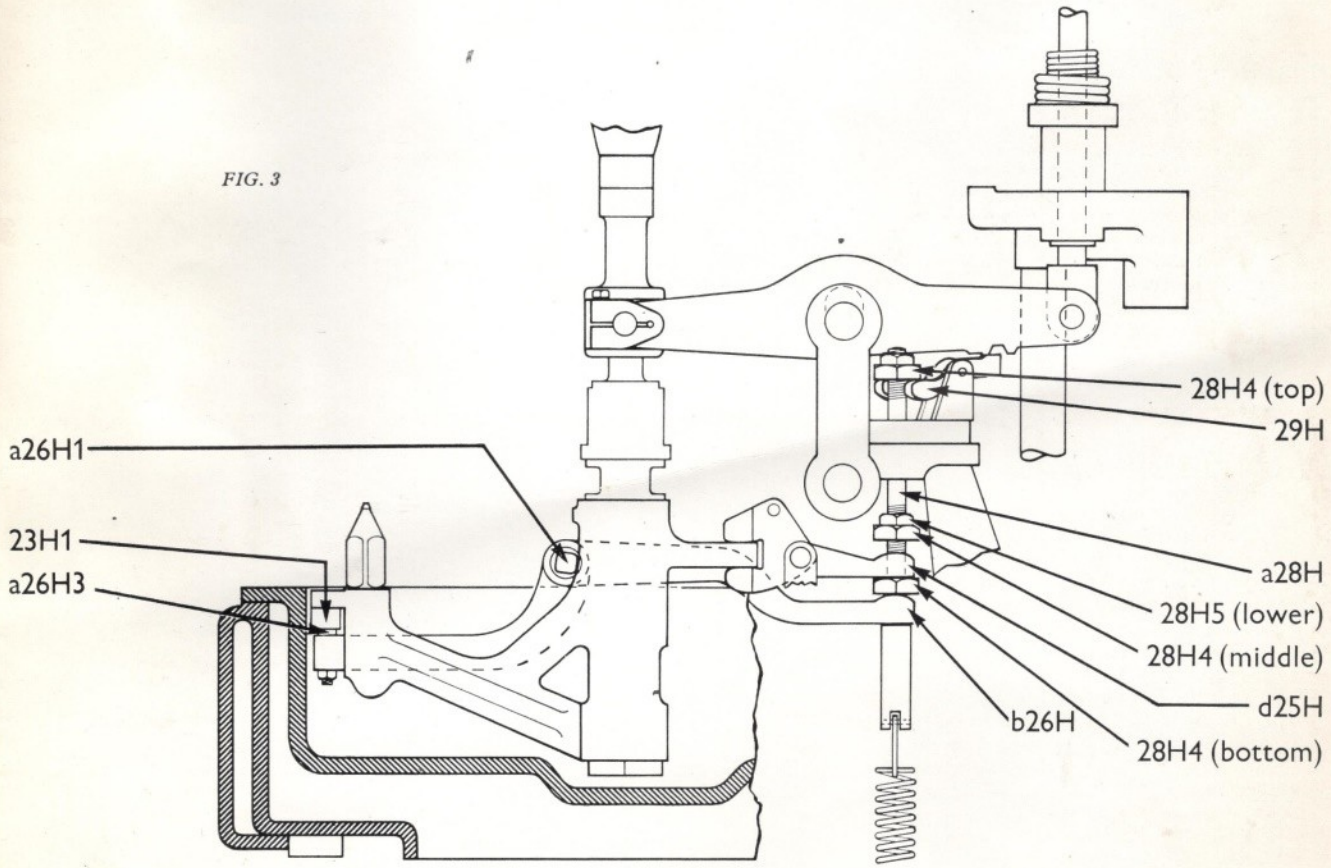
Remove the matrix-case, bridge, mold, pump piston and the pair of levers from the machine. Attach the nozzle gauge 8CT3, fit the nozzle, and raise the melting pot to casting position. To facilitate the following adjustments, check the distance between the underside of lock nut 28H4 (bottom) and the top of the pump body operating rod a28H – it should measure $5\frac{1}{8}''$. Also, the gap between nuts 28H4 (middle) and 28H4 (bottom) should measure approximately $\frac{13}{16}''$.

Into the gap between the pump body lifting lever b26H and the swing frame (b37H) insert a convenient wooden wedge or type metal of appropriate thickness. Lower the melting pot and remove both the nozzle gauge and the nozzle. Making sure that the packing is still intact under the lifting lever, raise the melting pot to the casting position. Screw in place the nozzle squaring post 8CT6, taking care that its shoulder is firmly in contact with the pump body.

With a try-square (or the nozzle gauge if a try-square is not available) resting on the top surface of the main stand, check that the post is standing exactly perpendicular when seen from the front. To adjust, slacken the lock nut 28H5 (lower) and move the nut 28H4 (middle) up or down as required. When the post is square, tighten the lock nut 28H5 (lower) and check to see that the adjustment holds. (Note: the post will stand square, front and rear, unless the pump body, lifting lever d25H and/or lifting lever stands are badly worn, in which case the affected parts should be renewed.)

Remove the nozzle squaring post and the packing under the lifting lever.

FIG. 3



Centering the Nozzle to its Mold Seating

When the nozzle is seated on its bearing in the mold cone hole, the pump body lifting lever pin a26H3 must be central in its bearing 23H1.

It is assumed that the pump body operating rod nut 28H4 (middle) has not been moved after the nozzle-squaring adjustment.

Lower the melting pot, affix the nozzle gauge and replace the nozzle. Loosen the two melting pot casing stud nuts a12H10, but not the melting pot casing screw (12H8). Raise the melting pot to casting position and insert sufficient types or packing beneath the lever b26H *(Fig. 3)* to take the nozzle $\frac{1}{16}$″ away from its seating in the gauge.

By manipulation of adjusting screws a37H9 and a37H10 (2), insure that the nozzle can be moved freely about the center of its seating in the gauge.

Before the stud nuts a12H10 (2) are locked, it may be necessary to move the rear of the melting pot sideways to centralize the two yokes of lifting levers d25H and b26H about the pump body operating rod a28H *(Fig. 3)*. If this is carried out carefully, the nozzle adjustment will not be altered.

Tighten the two nuts a12H10 and remove the packing under the pump body lifting lever.

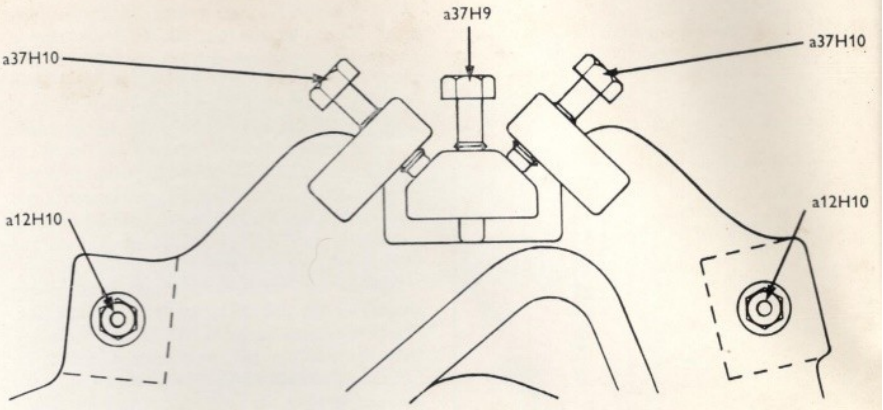


FIG. 4

Piston Lever Adjustment

To adjust the position of the piston lever, re-equip the machine for running (with pump, piston, set of levers, nozzle, mold, bridge, matrix-case etc., in place) and raise the melting pot to its casting position.

(For machines No. 22,000 and over)

Turn machine camshaft to 90° and slacken the pump bell crank connecting rod nuts 22H2 and 22H4. Adjust rod 22H to give ·020″ clearance between the collar stop 31H16 and the crosshead 31H2. Tighten nuts 22H2 and 22H4.

Now release the pump hand trip and turn the machine camshaft to 220°. Slacken the rod cross-head stop post nut 31H9. Loosen the nuts 31H13 and 31H17 at the lower end of the pump body spring rod so that they are well clear of the swing frame post. Turn the rod crosshead stop post 31H8 in a clockwise direction until the connecting link pin 32H1 is free. Now turn the crosshead stop post counter-clockwise until the link pin just contacts the piston lever, then turn the crosshead stop clockwise a half-turn and lock in position with the nut 31H9. Turn the nut 31H13 until it just makes contact with the swing frame post and secure it with its lock nut 31H17.

The correct position of the operating rod lever 29H *(Fig. 3)* is obtained by adjustment of nut 28H4 (top). With the machine at 220° and the pump trip handle engaged, there should be $\frac{1}{32}$″ clearance between this lever and the machined recess in the lower edge of piston lever c18H.

FIG. 5